

# Safety Culture: Where Do We Stand? and where are we going...

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# History of “Safety Culture”?

- A label invented by IAEA 25+ years ago following Chernobyl
- Chernobyl was due to “something” more than equipment/design or human error – pervasive yet hidden – neither understood nor managed
- The pragmatic result of the label was decades of attention, including researchers and regulators, e.g., NTSB:
  - Before accident, Enbridge creates Director of Safety Culture, but tasked with on-site personal safety, not pipeline control
  - In DC train collision, “shortcomings in internal communications,... recognition of hazards, ...assessment of risk..., and implementation of corrective actions are all evidence of an ineffective safety culture”
- Equally long history of “safety climate”

# Approaches to Safety Culture

- An **ideal**: Safety as an overriding value, attention to safety commensurate with risks
- A set of organizational **attributes** or processes:
  - Informed, reporting, just, learning, flexible (Reason);
  - Preoccupation with failure, reluctance to simplify, sensitivity to operations, resilience, expertise (HRO);
  - Enabling – enacting – elaborating iterative processes (Vogus)
- A **measure**: Self-perceptions of climate on a survey, including management/front-line difference, hopefully a leading indicator of safety
- A **conversation starter**: An acceptable way to get lots of people talking and working on “soft stuff”: e.g., can people discuss that “the mentality now is to move trains”?

# “Safety Culture”, like any culture, is

- **Values:** a high priority placed on safety
- **Norms:** what we do; what is expected and “right”
- **Beliefs:** what is correct, what is perceived
- **Assumptions:** unstated definitions and rationales (fish don’t see the water)
- **Symbols:** heroes, stories, jargon
- **Strength:** few or many impacts; shared widely or divergent across groups, location, or subcultures (Schein: managers vs. engineers vs. operators)

# Culture and Climate

- Culture is difficult to measure and manage
- Climate is easy to measure (survey) and holds the promise of a leading indicator, but...
- Perceptions can be misleading, e.g., “respect” scores low because health insurance changed
- Variability within organization by unit, hierarchical level
- Aspects of safety climate may act in combination (safety priority, procedures, communications, learning climate)
- Safety climate antecedents and consequences may be industry specific (recent meta-analysis)
- Most safety climate evidence refers to **personal** safety, not **process** safety – personal safety is more tangible, perceptible; process safety involves interfaces/linkages

# Culture is Meaning

- Leaders and individuals “emphasize safety over all other competing goals” (BSEE, 2011; others)
- “Appreciation for the importance of safety... for its integration and balance with competing performance objectives” [how different is that?]
- What does this mean? We learn what to do thru role models and feedback (like “case law”)
- How to get commitment to desired values and behaviors vs. cynicism and check-the-box compliance (and defensive misrepresentation)?

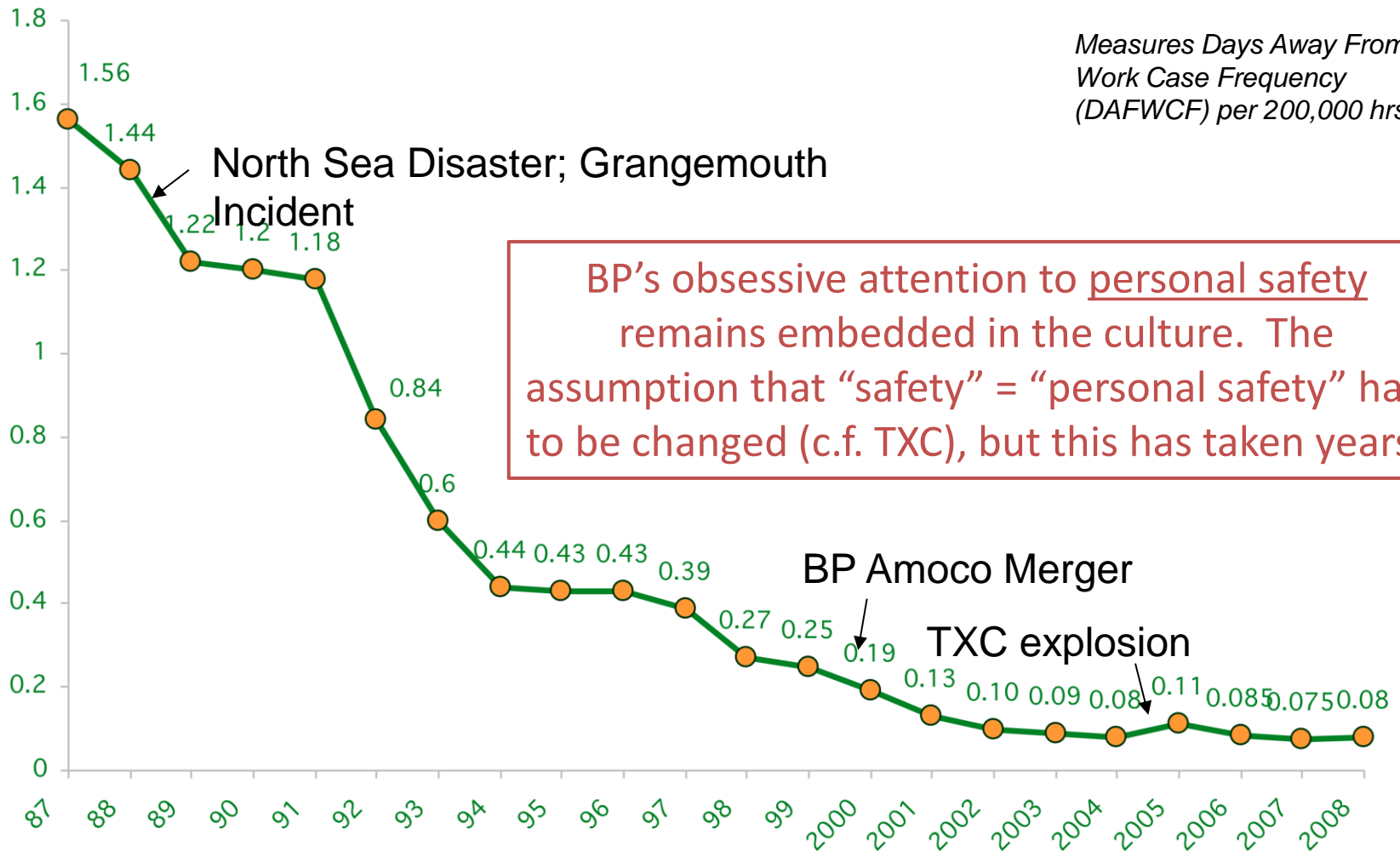
# Cultural Assumptions

Each culture will be a unique combination of assumptions arising from history, leaders,...

- “Human error is the cause of accidents”
- “People must be held accountable for their acts”
- “Good managers don’t have any problems”
- “Safety is the responsibility of safety experts”
- “Safety is assured by writing and following rules”
- “Risks can be calculated”
- “There is one best way, one best culture”
- “Our organization is unique – we do it our way”
- “There must be humans to deal with unpredictables”

# The Meaning of “Safety”: BP days away from work 1987-2008

*Measures Days Away From  
Work Case Frequency  
(DAFWCF) per 200,000 hrs*



Very similar story with Metro train: “safety” = no parking lot injuries!

# Building Safety Culture

- Difficult to mandate from the top; culture is not an end in itself: shape culture while solving problems (together)
- NRC was *NOT* the main source of safety culture in nuclear power: INPO peer learning in competition-free context
- Build shared purpose and capability: commitment allows for shorter feedback loops (more reliable)
- Leaders are watched closely for signals
- Leverage existing positive examples/models
- Be clear where/why you need strict compliance
- It takes time to cultivate and try out new behaviors
- Safety culture/climate self-analyses may generate useful conversations, attention to culture, openness and trust, but there is also a risk of increased cynicism and resistance

# Can Regulators Shape Culture?

- Note that NTSB accident reports are identifying cultural deficiencies but not making specific recommendations
- SUBSAFE is a great example of a unified approach to safety embedded in culture (> Adm. Rickover; 50 yrs)
- Limited goals (hull integrity), clearly stated, shared, “hearts and minds”, separation of powers
- Tough but fair: audits are a partnership with a mix of insiders and outside peers, a learning opportunity, ALL are audited (HQ too)
- Attention to culture: annual renewal, alert to complacency and arrogance, “trust but verify,” audit up
- Regulators have partly created the culture you now want to change; how can you change yourselves in ways that create and embed a new culture?

***“Not everything that counts can be counted,  
and not everything that can be counted counts”***

W. B. Cameron (widely attributed to Albert Einstein)

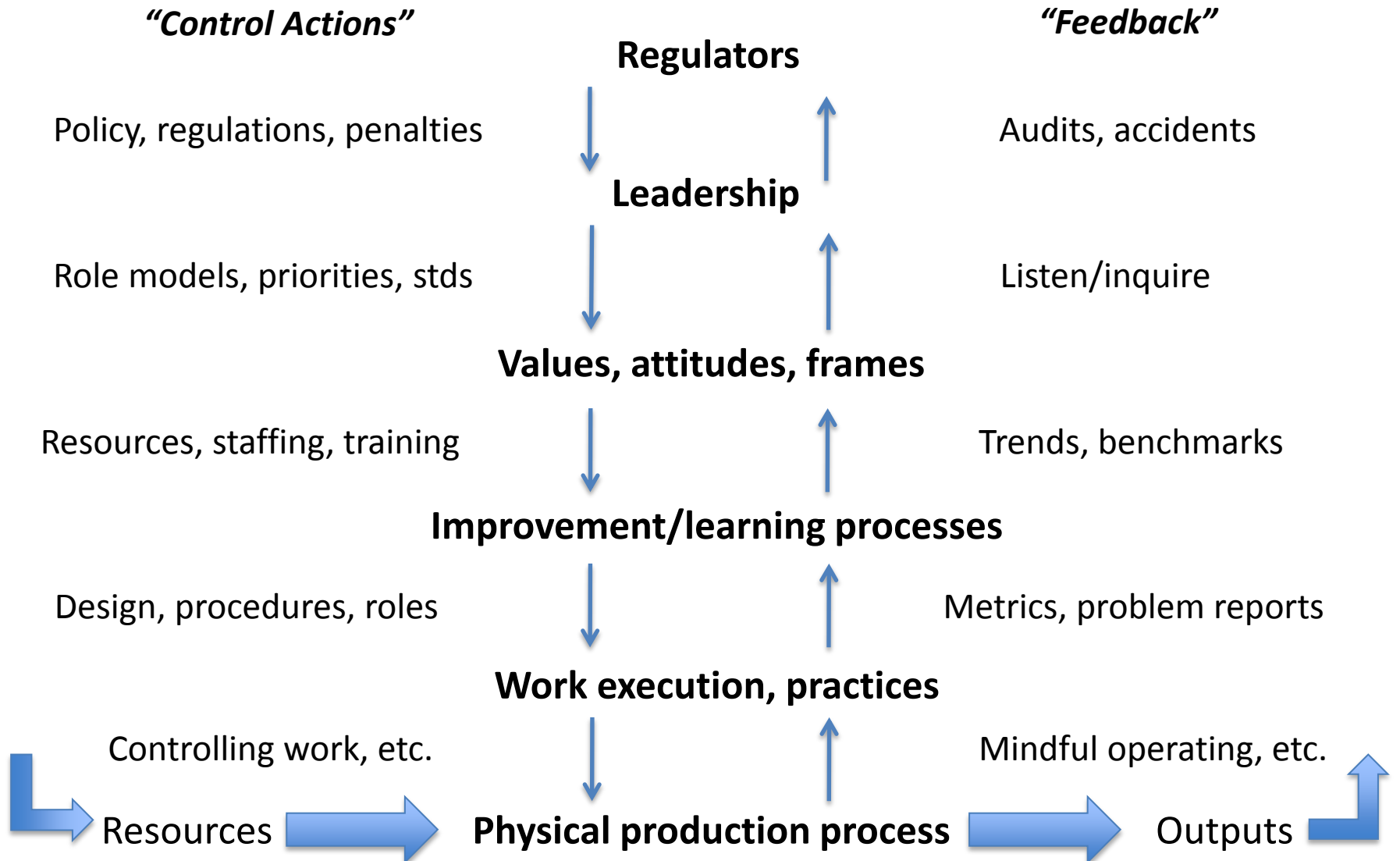
**I look forward to discussion**

# Safety Culture Themes

Like personalities, each culture is unique, yet there are recurrent themes and similarities, e.g.,

- **Accountabilities:** individual, group, organizational, including blame and justice?
- **Approach:** Prevention or Resilience?
- **Hazard Focus:** Personal or Process Safety?
- **Compliance:** How many rules? Rules = Guidelines?  
Rules as a way to shift blame to the front line?
- **Power and Status:** Scarce or shared?
- **Trust:** Faith in people? Faith in institutions?
- **Knowledge:** Exploit/perform or explore/learn?

# Culture Inhabits Work Organization



cf. N. Leveson, *Engineering a Safer World*, MIT Press, 2012